

**REMARKS/ARGUMENTS**

Claims 1-42 were pending in the present application. The present response amends claims 9 and 42, and adds new claims 43-44, leaving pending in the application claims 1-44. Reconsideration of the rejected claims and consideration of the newly presented claims is respectfully requested.

**I. Rejection under 35 U.S.C. §103**

Claims 1-42 are rejected under 35 U.S.C. §103(a) as being obvious over the acknowledged prior art in view of *Sato* (US 5,766,360) and *Sun* (US 5,940,175).

Applicants' independent claim 1 requires a measurement station having therein an optical measurement system forming a scatterometry instrument, as well as a data processor capable of analyzing the characteristic signatures of a wafer using a scattering model obtain a measure of the patterned features on the wafer so that a process carried out by the wafer process tool can be analyzed. Such requirements are not included in the prior art, nor recited in *Sato* or *Sun*.

As set forth by the Examiner (OA p.2), *Sato* discloses a system for "measuring and inspecting a thin film," using a tool such as an ellipsometer to measure film thickness (col. 7, lines 57-66). A determination is made whether the thin film is "defective," such as where "the growth thin film of the substrate 15 deviates from a predetermined standard" (col. 4, lines 52-57). If a film is determined to be defective, the corresponding wafer can be "removed from the process" if possible, or, if the wafer cannot be removed, "processing can be continued" (col. 5, lines 4-14). This system is very different from that recited in Applicants' claim 1. First, there is no teaching or suggestion in *Sato* that a scatterometry instrument can be used successfully in a measurement station as required in Applicants' claim 1. Simply because various other scatterometry systems are known does not mean that it would be obvious that a new scatterometry system could be used in such a wafer processing tool with any likelihood of success, or without undue experimentation. Further, there is no teaching or suggestion of how a data processor of a wafer process tool can be used to analyze the characteristic signatures of a wafer using a scattering model for a process of the tool. Further still, there is no teaching or suggestion in *Sato* or the acknowledged prior art that a scatterometry process can be used after a process carried out by the wafer tool, as the acknowledged prior art analyzes a wafer either "after the development step using a stand-alone machine" or "at the end of lithographic processing"

(p. 8, line 22-page 9, line 2). As such, Applicants' claim 1 cannot be rendered obvious by the acknowledged prior art in view of *Sato*.

*Sun* is cited as showing a "means of accessing any point on the wafer" (OA p. 2). The accessing means of *Sun* does not make up for the deficiencies in the acknowledged prior art and *Sato*. As such, *Sun* cannot render Applicants' claim 1 obvious, either alone or in any combination with *Sato* and the acknowledged prior art.

Applicants' independent claim 26 requires a scatterometry instrument integrated within a wafer measurement station that forms one station of wafer process tool, and a data processor in communication with the detector for analyzing the characteristic optical signatures using a scattering model to obtain a measure of the patterned features on the wafer such that a process carried out by the wafer process tool can be analyzed. As discussed with respect to claim 1, such limitations are neither taught nor suggested by the acknowledged prior art, *Sato*, or *Sun*, either alone or in any combination. As such, Applicants' claim 26 cannot be rendered obvious.

Applicants' independent claim 40 recites a method requiring analyzing optical characteristic data of features on a wafer using a scattering model, in a wafer process tool, after completion of any of one or more process steps. As discussed above with respect to claims 1 and 26, such limitations are neither taught nor suggested by the acknowledged prior art, *Sato*, or *Sun*, either alone or in any combination. As such, Applicants' independent claim 40 cannot be rendered obvious.

Applicants' independent claim 42 recites a method requiring measuring an optical characteristic of the wafer using a scattering model after transferring the wafer robotically from a process station of the process tool. As discussed above with respect to claims 1, 26, and 40, such limitations are neither taught nor suggested by the acknowledged prior art, *Sato*, or *Sun*, either alone or in any combination. As such, Applicants' claim 42 cannot be rendered obvious.

Dependent claims 2-25, 27-39, and 41 each depend from one of claims 1, 26, and 40, and therefore also are not rendered obvious. Further, these dependent claims recite many limitations that also are not rendered obvious for reasons in addition to those discussed above with respect to the independent claims. Applicants therefore respectfully request that the rejection with respect to claims 1-42 be withdrawn.

## II. Amendment to the Claims

Unless otherwise specified, amendments to the claims are made for purposes of clarity, and are not intended to alter the scope of the claims or limit any equivalents thereof. The amendments are supported by the specification and do not add new matter to the specification.

## III. Newly Presented Claims

Claims 43 and 44 have been added to cover different aspects of the present invention. In particular, these claims require adjusting processes or process parameters for subsequent processing of a wafer in the wafer process tool based on a measure of the surface of the wafer. Such a limitation is not taught or suggested in any of the acknowledged prior art, *Sato*, or *Sun*, and should be allowable over these references for this reason as well as those listed above. These claims are supported by the specification and do not add new matter. Applicants therefore respectfully request consideration of newly presented claims 43 and 44.

## IV. Conclusion

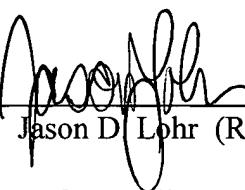
In view of the above, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the pending claims and a notice of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-1703, under Order No. TWI-31000. A **duplicate copy of the transmittal cover sheet attached to this Response to Office Action Mailed October 3, 2003**, is provided herewith.

Respectfully submitted,

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